

REMARKS/ARGUMENTS

Claims 1-32 remain pending. Claims 1, 15-18, 23, and 24 have been amended. No claims have been added or canceled. All prior claims were rejected as allegedly being unpatentable over the cited art. Reexamination and reconsideration of the claims, as amended, are respectfully requested.

Claim Rejections Under 35 U.S.C. § 102

Claims 1, 2, 5-8, 10, 11, 17, 18, 22-24, and 27-31 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 6,116,737 in the name of Kern. Such rejections are traversed in part and overcome in part as follows.

As originally filed, independent claim 1 recited a method for calibrating laser pulses from a laser eye surgery system by imaging a known object, directing a pulsed laser beam onto a calibration surface, imaging the resulting mark on the calibration surface, and comparing the image of the mark to the known object. Applicants note that the imaging of a known object, and/or the comparison of a known object image with any other structure have not been shown in the cited reference, so that anticipation of claim 1 has not been established. Independent claim 23 previously recited determining an iris calibration by comparing an image of an ablation to an image of a known object, and that element of the claims has similarly not been addressed and/or shown in the cited references. Independent claim 24 recites a processor that determines a calibration by comparing an image of a mark on a calibration surface to an image of a known object, so that the anticipation of claim 24 has also not been established.

To expedite prosecution of the present application (rather than for reasons of patentability under the rules or statutes), Applicants have amended independent claim 1 to recite that the laser eye surgery system has an image capture device that is oriented for imaging an eye during laser eye surgery on that eye. Claim 1 also now recites that the known object is imaged by the image capture device of the laser eye surgery system, and that the imaged object has a size, shape, and location. The mark on the calibration surface is, per claim 1, imaged by the image capture device of the laser eye surgery system, and the mark also has an imaged mark

size, shape, and location. The calibrating step of independent claim 1 now recites that it is a laser beam cross sectional shape, laser beam cross sectional location, and/or a laser beam cross sectional size which is calibrated. Applicants respectfully submit that such calibration, using an image capture device of the laser eye surgery system and a known object, is not remotely seen in the Kern interferometer system or method. Rather than using a known object along with an image capture device (such as a microscope which is already included in the laser eye surgery system for visually directing treatment), Kern uses an entirely separate (and much more complex) interferometer to try to measure ablation depth profiles. The Kern interferometric approach will not only be more complex, but will also fail to provide the straightforward and accurate cross-sectional size, shape, and/or location of claim 1. Hence, Kern does not anticipate (or otherwise render unpatentable) that claim.

Regarding U.S. Patent No. 4,732,148 to L'Esperance, Jr., Applicants note that the Office Action appears to rely on that reference as showing that an iris diaphragm was known to be opened and closed during the course of laser eye surgery, the use of certain treatment beam diameters, and/or the like. There is no indication that L'Esperance makes use of a known object and an image capture device of the laser eye surgery system for calibration of a laser beam cross sectional shape, a laser beam cross sectional location, and/or a laser beam cross sectional size of the laser eye surgery system, nor for calibration of the laser eye surgery system in general, so that L'Esperance does not appear to make up for the shortcomings of the Kern reference.

Regarding the dependent claims, Applicants note that many elements of those claims have not been addressed, nor even remotely shown to be anticipated and/or rendered obvious by the cited references. For example, claim 5 recites that the imaging of the known object and the imaging of the mark on the calibration surface are carried out in the *same position*. This may significantly enhance image-based calibration. Claim 6 recites that the directing of the pulsed laser beam onto a calibration surface and the imaging of the known object and calibration surface are carried out in the same plane. As can be understood with reference to the originally filed specification for this application, this very simple arrangement provides highly accurate calibration of the laser beam cross sectional size, shape, and/or location without

having to resort to a separate measurement system at another location, such as a highly complex interferometric systems or the like, so that these elements further support patentability of their respective claims.

Regarding independent claim 23, that claim has been amended to recite imaging a known object with the microscope camera of the laser eye surgery system, and that the camera is oriented toward an eye treatment of the laser eye surgery system. The laser beam pulses are scanned across a photosensitive material disposed along the eye treatment plane, and the ablation is also imaged while the photosensitive material is disposed along the eye treatment plane. An iris calibration of the laser eye surgery system is determined by *comparing the ablation size to the known object size*. Hence, claim 23 is allowable for many of the reasons given above regarding claim 1.

Regarding claim 24, that claim (as amended) recites a system for calibrating laser pulses. An image capture device is oriented toward a treatment plane, and a known object is positionable for imaging by the image capture device. A pulsed laser beam delivery system is oriented for directing a pulsed laser beam toward the treatment plane, and a processor is coupled to the image capture device. The processor determines a calibration of the laser beam delivery system by *comparing a mark on the calibration surface to the image of the known object*. Hence, claim 24 is also allowable for many of the reasons given above.

Rejections Under 35 U.S.C. §103(a)

Claims 3, 4, 9, 12-16, 19, 21, 25, 26, and 32 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Kern in combination with L'Esperance Jr. Applicants note that these rejections are generally overcome for the reasons given above regarding the independent claims. Additionally, Applicants note that numerous elements of the claims are simply completely absent from the Kern reference, from the L'Esperance, Jr. reference, and from any reasonable combination of these two references. For example, claim 15 recites determining a hysteresis of a variable aperture. Hysteresis of variable apertures is nowhere to be found in either the Kern or L'Esperance Jr. references, much less any method for determining hysteresis of a variable aperture. In fact, Applicants respectfully submit that one of

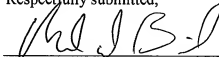
ordinary skill in the art could combine L'Esperance, Jr., Kern, and innumerable other references in the field, could attempt to calibrate laser eye surgery systems for decades, and could fail to ever be aware that hysteresis of a variable aperture was imposing a slight (but significant) error in the ablation shape imposed on test articles and eyes of patients, or even ever recognizing the existence of hysteresis in a variable aperture. As this very subtle source of error has not been shown to have been recognized in the art, much less the specific methodology now claimed for calibrating that hysteresis, Applicants respectfully submit that *prima facie* obviousness of the claim has not been established. Similarly, numerous other elements of the dependent claims have likewise not been shown in the cited references, including the identification of a rotation-induced wobble (as recited by claim 21), and the like.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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